Amendment to the Claims

1. (Currently Amended) An image encoding apparatus comprising:

a converter ~~for~~ receiving an image signal, and ~~for~~ carrying out orthogonal transformation on a block by block basis of an image frame to convert the image signal of individual ~~blocks~~ block to DC components and AC components;

a predicted reference value generator ~~for~~ receiving the image signal, and ~~for~~ generating a predicted reference value of each image frame from ~~individual~~ DC components obtained by orthogonal transformation of left-edge blocks of the image frame; and

a differential unit ~~for~~ obtaining difference values between the DC components output from said converter and the predicted reference value generated by said predicted reference value generator, wherein

said image encoding apparatus carries out quantizing and variable-length encoding of the AC components and the difference values obtained by said differential unit, carries out quantizing and variable-length encoding of the predicted reference value to be added to a header, and outputs the encoded AC components and difference values along with the encoded predicted reference value added to the header as a bit stream.

2. (Original) The image encoding apparatus according to claim 1, wherein said predicted reference value generator generates the predicted reference value of each image frame by obtaining an average value, mode or median of the DC components of the left-edge blocks of the image frame.

3. (Currently Amended) The image encoding apparatus according to claim 1, wherein said predicted reference value generator generates the predicted reference value of a present image frame from the ~~individual~~ DC components resulting from orthogonal transformation of left-edge blocks of a past image frame or future image frame.

4. – 16. (Cancelled)

17. (Currently Amended) An image decoding apparatus comprising:

a variable-length decoder ~~for~~ decoding difference values and AC components of individual ~~blocks~~ block contained in a bit stream, and ~~for~~ decoding a predicted reference value of each image frame generated from DC components of left-edge blocks of the image frame added to a header; and

an adder ~~for~~ obtaining the DC components by adding the difference values and the predicted reference value, which are decoded by said variable-length decoder, wherein

said image decoding apparatus outputs a decoded image signal by carrying out dequantization and inverse orthogonal transformation of the AC components and the DC components obtained by said adder.

18. – 20. (Cancelled)

21. (New) An image encoding method comprising:

receiving an image signal, and carrying out orthogonal transformation, by utilizing a converter, on a block by block basis of an image frame to convert the image signal of individual block to DC components and AC components;

receiving the image signal, and generating a predicted reference value of each image frame from DC components obtained by orthogonal transformation of left-edge blocks of the image frame;

obtaining difference values between the DC components and the predicted reference value;

quantizing and variable-length encoding of the AC components and the difference values;

quantizing and variable-length encoding of the predicted reference value to be added to a header; and

outputting the encoded AC components and difference values along with the encoded predicted reference value added to the header as a bit stream.

22. (New) The image encoding method according to claim 21, further comprising: generating the predicted reference value of each image frame by obtaining an average value, mode or median of the DC components of the left-edge blocks of the image frame.

23. (New) The image encoding method according to claim 21, further comprising: generating the predicted reference value of a present image frame from the DC components resulting from orthogonal transformation of left-edge blocks of a past image frame or future image frame.

24. (New) An image decoding method comprising:

decoding, by utilizing a variable-length decoder, difference values and AC components of individual block contained in a bit stream, and decoding a predicted reference value of each image frame generated from DC components of left-edge blocks of the image frame added to a header; and

obtaining the DC components by adding the difference values and the predicted reference value, which are decoded by said variable-length decoder, wherein

outputting a decoded image signal by carrying out dequantization and inverse orthogonal transformation of the AC components and the DC components.